DOCUMENT RESUME

ED 233 101 UD 023 003

AUTHOR Fenn, Lawrence M.; Iwanicki, Edward F.
TITLE An Investigation of the Relationship between Student Affective Characteristics and Student Achievement within More and Less Effective School Settings.
PUB DATE Apr 83
NOTE 30p.; Paper presented at the Annual Meeting of the American Educational Research Association (Montreal, Quebec, Canada, April 11-15, 1983).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Academic Achievement; Educationally Disadvantaged; Institutional Characteristics; Intermediate Grades; *Locus of Control; *School Effectiveness; *Self Concept; Student Characteristics; *Student Motivation

ABSTRACT

Conducted in two phases, this study compared students' affective characteristics (locus of control, academic motivation, and self concept) at schools that were identified as either more effective or less effective. In phase one, fourth, fifth, and sixth graders from seven Title I schools in a New England city (n=1,373) were tested on ability and academic achievement. The results provided the basis for classifying the schools as more or less effective. In phase two, sixth graders were subjected to instruments that measured their locus of control, academic motivation, and self concept. In both phases, adjustments were made to account for the effects of background variables on students' achievement and affective characteristics. The findings revealed that, on all measures, the affective disposition of students in more effective schools was consistently more positive than that of students in less effective schools. Discriminant analysis indicated that affective characteristics can be used to predict group membership in more effective and in less effective schools. (Author/MJL)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED233101

An Investigation of the Relationship Between Student Affective Characteristics and Student Achievement Within More and Less Effective School Settings

Lawrence M. Fenn

Windham Public Schools
Willimantic, Connecticut 06226

Edward F. Iwanicki

School of Education
University of Connecticut
Storrs, Connecticut 06268

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Lawrence M. Fenn

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

CG 023 003

Paper Presented at the Annual Meeting of

The American Educational Research Association

Montreal, Canada
April 1983

An Investigation of the Relationship Between
Student Affective Characteristics and Student Achievement
Within More and Less Effective School Settings

Abstract

The objective of this study was to examine the relationship between student affective characteristics and urban elementary schools' relative cognitive effectiveness when controlling for background variables.

This study was conducted in two phases. Phase I consisted of identifying two more effective and two less effective schools. The sample of students utilized in this phase consisted of grade 4, 5, and 6 students from seven disadvantaged Title I schools in a northeastern New England city (n = 1,373). These students completed the Sequential Tests of Educational Progress (STEP), which measure student achievement in the areas of reading, vocabulary, writing, mathematics computation, and mathematics concepts, and the School and College Ability Test (SCAT). As a result of Phase I, schools were classified as more effective or less effective in terms of achievement. The two schools identified as more effective and the two schools identified as less effective were matched on socioeconomic criteria. A confirmatory multivariate analysis of covariance (MANCOVA) was conducted at the conclusion of Phase I to insure that significant achievement differences existed between the more and less effective schools after controlling for background variables.

In Phase II, grade six students from the two more effective and the two less effective schools completed measures of student motivation, locus of control, and self-concept. Subsequent analyses in Phase II focused on

an investigation of the relationship between a school's classification and its students' affective characteristics. Through utilizing MANOVA, it was determined that more effective schools were significantly different from less effective schools in terms of motivation, locus of control, and self-concept after controlling for background variables. Follow-up tests indicated that more effective schools differed from less effective schools on each of the affective characteristics examined.

The findings of this study have implications for future school effectiveness research as well as implications for programs and strategies designed to enhance student affective characteristics.

An Investigation of the Relationship Between Student Affective Characteristics and Student Achievement Within More and Less Effective School Settings

The current dismay over the quality of public schooling makes it critical for educators to identify determinants of school effectiveness. It is imperative that a comprehensive conceptual and empirical foundation for understanding the nature of effective schools be developed. Through research on effective schools, elementary schools have been classified as either more or less effective based on student achievement. Edmonds (1978), Brookover and Lezotte (1979), and Frederiksen (1975) have identified the input variables of leadership, time on task, teacher expectation, communication, school climate, and parental concern as significant correlates of school effectiveness. Their findings have provided educators with some direction for studying a school's administrative and instructional practices. Cohen (1980) and Madaus, Airasian, and Kellaghan (1980), indicating a need to look further, hypothesized that administrative and instructional variables are mediated by affective factors. The basic purpose of this study is to examine whether the affective variables of locus of control, academic motivation, and self-concept account for differences in achievement between more and less effective schools after controlling for relevant background variables.

Background

Studies have shown a moderate positive correlation between the student affective characteristics of academic motivation, academic self-concept, locus of control and student achievement (Lefcourt, 1976; Bloom, 1976; Deci,

1975). Unfortunately, effective schools researchers have not included student affective characteristics in their studies. Cohen (1980), in his "contingency explanation" of school effectiveness, applauds effective schools researchers for their common sense selection of input variables, but criticizes them for overlooking the importance of student motivation to learn. He argues that schools which presently do not enroll reasonably well-motivated students will not improve school achievement unless the problem of student motivation has been addressed.

Madaus et al. (1980) have voiced the concern that the process of identifying the predictors of school effectiveness has a number of hazardous consequences. They note that the very choice of predictor variables has been limited to policy-manipulated ones. Although student affective characteristics are more difficult to measure and to manipulate than input variables related to programs, their exclusion from effective schools studies is not warranted.

Bloom (1976) contends that children develop a general attitude toward schools and schooling which may influence their affective disposition toward learning tasks within the school framework. He estimates that these characteristics account for as much as twenty-five percent of the variance in student achievement. Bloom's contention regarding the influence of affective characteristics on school learning provided the motivation to examine the relationship of student locus of control, achievement motivation, and self-concept to school effectiveness in this study.

For this study, locus of control was viewed as the students' generalized belief that they control and are responsible for their own academic successes and/or failures (Crandall, Katkovsky, & Crandall, 1965). Those with internal

control expectancy believe that what happens is a result of their own behavior. Students with external control expectancy believe that what happens is due to luck, chance, or fate.

Crandall, Katkovsky, and Preston (1962) reported the initial relationship between locus of control and achievement activity. A number of personality measures were used in an attempt to predict achievement. The predictors included need for achievement, manifested anxiety, student expectation of intellectual success, student achievement standards, and locus of control. The Intellectual Achievement Responsibility Questionnaire (IARQ) was used to measure student locus of control. Crandall demonstrated that of all these predictors, the locus of control variable had the strongest relationship to achievement. In a later study (Crandall, Katkovsky, & Crandall, 1965), the IARQ scores were found to be significantly related to third, fourth, and fifth grade boys' and girls' total achievement test scores on the Iowa Test of Basic Skills.

Coleman and associates (1966) examined numerous variables which related to school achievement and found that externals believed themselves to be in an unresponsive environment. Such an external attitude precluded a positive relationship between diligence, hard work or effort, and positive outcomes. Studies by Feather (1963), McGhee and Crandall (1968), and Nowicki and Roundtree (1971) confirmed that students with an external locus of control tended to exhibit lower academic achievement. Lefcourt (1976) concluded that research supports the contention that locus of control plays a mediating role in determining whether students become involved in the pursuit of achievement.

Achievement motivation was viewed as the strength of the emotional need within the student to achieve or act favorably toward schoolwork (Deci. 1975).

Ringness (1975) concluded that student motivation initiates, maintains, and controls the extent and direction of behavior. Through a review of several studies of the relationship of achievement motivation and school achievement, Uguroglu and Walberg (1979) reported the following mean correlations:

- Between achievement motivation and standardized test performance, $\bar{r}$ = .34 (based on 22 studies),
- Between achievement motivation and grade point average, $\bar{r}$ = .45 (based on 38 studies).

Ryals (1969) found that when inner city teachers were trained to integrate achievement motivation strategies into their classrooms, significant increases were exhibited by students in both mathematics and science. The study indicated that achievement motivation training had fairly dramatic effects on school performance when it was properly understood by teachers. Recently, Bloom (1981, p. 128) reinforced the concept of learned motivation. He noted that, "when students are informed of what they are to achieve, intrinsic motivation becomes possible."

Academic self-concept was viewed as the student's perceived ability to achieve academic tasks in comparison to others (Gordon, 1965). Whitmore (1980) as well as Bledsoe and Garrison (1962) reported a significantly positive relationship between self-concept and academic achievement. Brookover, Thomas, and Patterson (1976) found an association of r = .57 between school grades and academic self-concept for both males and females. Also, the relationship between school grades and regarding oneself as a "good student in school" was found to be moderately high by Purkey (1970).

Studies comparing overachievers with underachievers have found that self-concept was a discriminating characteristic between the two groups (Taylor, 1964). The students with poor self-concepts underachieved.

Bloom (1976) summarized studies which related measures of student self-concept and student achievement. He surmised from the data that academic self-concept is the strongest of the affective measures in predicting school achievement. Bloom's findings were similar to those of Kifer (1973) who studies the cumulative effect of schooling on self-concept as it related to achievement. Kifer established that the relationship between self-concept and achievement increased from $r = .23$ in grade five to $r = .50$ in grade seven.

In summary, prior research concerning the relationship between achievement motivation, locus of control, self-concept, and school achievement supports the need to examine the student populations of more effective and less effective schools to determine if more effective school students differ from less effective school students in terms of their affective characteristics. This relationship has not been explored in earlier school effectiveness studies. The findings of this study may sensitize educators to the need to look more closely at student affective variables when examining those factors contributing to school effectiveness.

This study was conducted in two phases. Phase I classified schools as more effective and less effective in terms of achievement. Phase II investigated the relationship beteen a school's effectiveness classification and its students' affective characteristics.

Design and Outcomes of the Study: Phase I

Sample

The sample for Phase I of this study was students at grades 4, 5, and 6 (n = 1353) from seven Title I eligible elementary schools in a large urban northeastern New England city.

Instrumentation

Two instruments were used in Phase I of this study: (1) the Sequential Tests of Education Progress - Series II (STEP) and (2) the School and College Ability Tests - Series II (SCAT).

1.) The Sequential Tests of Education Progress (STEP)

The Sequential Tests of Education Progress - Series II (Educational Testing Service, 1972) were used to assess grade 4, 5, and 6 student achievement in reading, writing, vocabulary, mathematics computation, and mathematics concepts. The STEP Tests are a comprehensive battery of achievement measures selected by the school system because of their content validity or the degree of overlap between the test content and the school curriculum (Singh, 1979). The internal consistency reliabilities of the tests used in this study were .92 or greater (Educational Testing Service, 1971). Standard scores were obtained through a computerized application of Thurstone's absolute scaling procedure.

2.) The School and College Ability Tests (SCAT)

The School and College Ability Tests - Series II developed by the Educational Testing Service (1973a) were used to assess student academic ability. Student total SCAT scores were converted to Thurstone

standard scores through a computerized application of Thurstone's absolute scaling procedure. The Kuder-Richardson Formula 20 reliability for the total score was .92 for sixth graders participating in the 1970 norming of the instrument (Educational Testing Service, 1973b).

3.) Student Background Variables

In addition to ability and achievement tests results, information concerning the following student background variables was collected during Phase I for sixth graders in the two schools identified as more effective and the two schools identified as less effective: sex, age, family intactness, mother's education, father's occupation, father's education, mobility of family, attendance, family size, and family income. These background variables were used in this study due to their correlation with student achievement in prior studies. They are student-related measures whose variability is assumed to be determined by causes outside the school.[1] The manner in which these background variables were treated is summarized below.

Family Mobility	Number of years in district
Family Size	Number of siblings
Student Age	Age in years
Family Income (in terms of federal assistance eligibility)	1 = not eligible 2 = reduced eligibility 3 = eligible
Family Intactness	1 = intact 2 = not intact
Father's Education	1 = completed college 2 = attended college 3 = completed high school 4 = attended high school 5 = did not enter high school

[1] A more complete discussion of these background variables and their relationship to student achievement in this study is provided by Fenn (1983).

Father's Occupation	1 = professional 2 = skilled 3 = semi-skilled 4 = unskilled
Mother's Education	1 = completed college 2 = attended college 3 = completed high school 4 = attended high school 5 = did not enter high school
Student Attendance	1 = less than 6 absences 2 = 6 - 11 absences 3 = 12 - 30 absences 4 = more than 30 absences
Student Sex	1 = male 2 = female

Data Collection Procedures

School administrators for the participating schools were contacted and provided descriptive information regarding this study. After permission was granted for participation, the Sequential Tests of Educational Progress were administered to all grade 4-6 students by classroom teachers in the seven Title I schools. The STEP and SCAT were computer scored by Educational Testing Service. Once these achievement data were used to identify the two more effective and the two less effective schools, background data were gathered from the cumulative record folders of sixth graders in these schools.

Identifying the More Effective and the Less Effective Schools

Operationally defining elementary schools as either more effective or less effective was the primary goal of Phase I. In a manner similar to that utilized by Weber (1971), more effective elementary schools were distinguished from less effective elementary schools by examining student achievement across grades 4, 5, and 6. The five achievement variables analyzed were reading,

writing, vocabulary, mathematics computation, and mathematics concepts. Mean Thurstone standard scores were calculated for each achievement area across grades 4-6 for each of the seven schools. This information is summarized in Table 1. Then the differences between the school means and the composite means were calculated for each achievement area. Finally, these differences were summed across achievement areas for each school to obtain an aggregate mean achievement difference.

As noted in Table 2, schools were then ranked from high to low based on their aggregate mean achievement differences. Those schools having aggregate differential scores above the district average for Title I schools were classified as more effective and those having aggregate differential scores below the district average for Title I schools were classified as less effective. Five of the seven eligible schools were identified as more effective and two as less effective.

As the concluding step of Phase I, the five more effective schools and the two less effective schools were examined in terms of their size and their Title I eligibility ratios. The two more effective and the two less effective schools which were most closely matched in terms of size and their percentage of low socioeconomic students as determined by school lunch eligibility were selected to participate in Phase II of this study. The third and fourth ranked more effective schools were selected rather than those ranked first and second because they were more comparable to the two less effective schools based on size and the percentage of students eligible for free lunch. This approach to identifying more and less effective schools is supported by the literature (Whiteman & Deutsch, 1968; Hess, 1964; Kohn, 1977).

Table 1

Standard Score Achievement Means by School in Each Skill Area for Grades 4, 5 and 6 Combined and Composite Achievement Means Calculated Across the Seven Schools

School	1	2	3	4	5	6	7	Composite
Number of Students	113	235	102	228	229	125	321	1353
Reading	281.9	281.2	297.3	279.4	276.7	274.1	268.0	276.3
Vocabulary	275.7	275.8	274.0	275.6	271.5	268.0	264.7	271.5
Writing	281.8	281.0	280.0	278.6	274.8	271.4	266.1	275.0
Math. Comp.	284.2	286.0	281.1	278.3	281.6	278.1	275.0	280.2
Math Con.	278.5	277.4	275.2	273.5	272.4	270.2	265.6	272.4

Table 2

Aggregate Standard Score Achievement Mean Differences Across Grade Levels and Achievement Areas for Each School

School	1	2	3	4	5	6	7
Number of Students	113	235	102	228	229	125	321
Reading	+5.6	+4.9	+3.0	+3.1	+0.4	-2.2	-8.3
Vocabulary	+4.2	+4.3	+2.5	+4.1	0.0	-3.5	-6.8
Writing	+6.8	+6.0	+5.0	+3.6	-0.2	-3.6	-8.9
Math. Comp.	+4.0	+5.8	+0.9	-1.9	+1.4	-2.1	-5.2
Math Con.	+6.1	+5.0	+2.8	+1.1	0.0	-2.2	-6.8
Aggregate Mean Achievement Difference	+26.7	+26.0	+14.2	+10.0	+1.6	-13.6	-36.0

Schools are ranked from highest to lowest based on aggregate differentials across grades and achievement areas.

A follow-up multivariate analysis of covariance (MANCOVA) was employed to determine whether achievement differences between the two more and the two less effective schools were significant. The covariates utilized were the background variables of family's socioeconomic status, student sex, family mobility, student attendance, student age, family size, family intactness, father's education, mother's education, and father's occupation. The results of the MANCOVA presented in Table 3 were significant ($p < .05$), indicating that student achievement in the two more effective schools was significantly higher than student achievement in the two less effective schools across the five achievement areas tested. A univariate follow-up F-test indicating that the two more effective and two less effective schools were significantly different ($p < .05$) in all five achievement areas. A breakdown of adjusted and unadjusted achievement means and standard deviations within the more and less effective schools appears in Table 4.

It is important to note that using all the background variables in the MANCOVA was not the most efficient approach. Efficiency was not a critical concern since the sample size was large enough to include all background variables in the analysis without unduly sacrificing degrees of freedom. Even though this more conservative method was employed, the MANCOVA was still significant.

Since measures of ability are correlated highly with achievement (Madaus et al., 1980; Rapier, 1968), a comparison of mean SCAT scores between the two more effective schools and two less effective schools was conducted. A t-test conducted on these data indicated that there was no significant difference ($t = 1.67$, $df = 200$, $p > .05$) between the more effective and the less effective schools in terms of student ability.

Table 3

Results of the MANCOVA and the Univariate F Follow-up Conducted to Determine if Significant Differences Existed Between More Effective and Less Effective Schools in Terms of Achievemnt in Reading, Vocabulary, Writing, Mathematics Computation and Mathematics Concepts

MANCOVA Results

	Approximate F	Hypotheses df	Error df	Significance of F
Achievement	3.62	5.00	205.00	.004

Univariate F Results

Variable	Hypotheses SS	Error MS	Hypotheses MS	Error df	F	Significance of F
Reading	1423.10	51250.39	1423 10	245.?2	5.80	.017
Vocabulary	3036.45	47216.86	3036.45	225..)	13.44	.001
Writing	3713.45	55876.34	3713.45	267.35	13.89	.001
Math Computations	1332.00	58667.02	1332.00	280.70	4.75	.030
Math Concepts	1251.51	51104.59	1251.51	244.52	5.12	.025

Table 4

Adjusted and Unadjusted Means and Standard Deviations for the Five Achievement Areas within More and Less Effective Schools

	Reading	Vocabulary	Writing	Mathematics Computation	Mathematics Concepts
More Effective (N = 93)					
Unadjusted Means	284.8	282.0	284.7	288.2	282.0
Adjusted Means	283.4	280.8	283.5	287.5	281.1
Standard Deviations	19.7	18.0	19.3	18.6	16.4
Less Effective (N = 129)					
Unadjusted Means	272.5	268.6	269.7	279.8	272.2
Adjusted Means	273.5	269.5	270.6	280.3	272.8
Standard Deviations	15.8	16.1	18.1	17.3	17.4

As a result of Phase I, two more effective and two less effective schools were identified on the basis of student achievement as measured by the Sequential Tests of Educational Progress. Although the levels of student achievement within these two school categories were different, these schools were similar with respect to student ability and socio-economic status.

Design and Outcomes of the Study: Phase II

Sample

The sample for Phase II included all grade six students from the two more effective schools (n = 93) and the two less effective schools (n = 129). Phase II focused on grade six students because the literature has indicated that by grade six students have developed generalized attitudes towards themselves and their school (Bloom, 1976). The students in the sample varied with respect to all background variables except for race. The population selected was predominantly Caucasian with less than 1% minority representation. The racial homogeneity of this sample eliminates the concern expressed in the literature regarding the possible confounding effect of race in prior effective schools studies (Jensen, 1968; Edmonds, 1978).

Instrumentation

Three additional instruments were used in Phase II of this study: (1) the Intellectual Achievement Responsibility Questionnaire (IARQ), (2) the Junior Index of Motivation (JIM), and (3) the Self-Appraisal Inventory (SAI).

1.) The Intellectual Achievement Responsibility Questionnaire (IARQ)

The Intellectual Achievement Responsibility Questionnaire (Crandall, Katkovsky, & Crandall, 1965) was used in this study to measure students' locus of control. The IARQ was chosen for use in this study based on its "acceptable reliability and evidence of divergent and convergent validity" (Robinson & Shaver, 1973, p. 195). The IARQ is composed of thirty-four forced-choice items which provide a measure for assessing students' beliefs that they, rather than other people, luck, or fate, were responsible for their academic successes and failures. The instrument measured responsibility for classroom success (I+) and classroom failure (I-). Subscale raw scores have generally yielded low intercorrelations, providing evidence of the independence of the I+ and I- measures. In this study a moderate correlation of .48 was found between these two measures. Acceptable test-retest reliability coefficients (two-month interval) for both I+ (.66) and I- (.74) were reported by Delisle (1981).

2.) The Junior Index of Motivation (JIM)

Frymier's (1965b) Junior Index of Motivation scale was used in this study to assess student motivation. This questionnaire yields a weighted index of student academic motivation based on eighty forced-choice items. A test-retest reliability of .70 and a split-half reliability of .83 were reported by Frymier (1965a). Validation studies have found that the JIM significantly differentiates among students according to (1) their teacher's estimates of student motivation and (2) school grades (Frymier, 1965a).

3.) The Self-Appraisal Inventory (SAI)

To examine student academic self-concept, the intermediate level of the Self-Appraisal Inventory was used. The SAI is a self-report instrument which measures the self-concept of children in the areas of peer relations, family relations, school relations, and general self-concept. The 20-item subscale of School Relations was used in this study. The internal consistency reliability for the subscale of the SAI used in this study was reported to be .81 and the test-retest reliability (two-month interval) was .78 (Delisle, 1981).

Data Collection Procedures

As a result of Phase I, two more effective and two less effective schools were identified. Each of the grade six students in the four schools participating in Phase II were administered affective instruments during the spring of 1981. The Intellectual Achievement Responsibility Questionnaire, the Self-Appraisal Inventory, and the Junior Index of Motivation were administered by the principal investigator and a certified school psychologist. Detailed written instructions were provided for the psychologist. Make-up testing was conducted by the principal investigator for all students absent from the initial testing. The IARQ, JIM, and the SAI were hand scored by the investigator and the psychologist.

Ninety-six percent of the grade six students in Phase II completed all three measures of student affect. To help insure that the affective data were meaningful, the psychologist and the investigator observed students as they completed each instrument. Two students who were answering randomly, as indicated by responding to items without reading them first, were eliminated from the study. Since background data were missing on five students, they too were excluded from the study. In summary, two hundred twenty-two

students out of a possible two hundred twenty-nine eligible for Phase II of this study completed all testing. Of the seven students excluded, five were from the less effective schools and two were from the more effective schools.

Data Analysis Procedures

The basic research question addressed in Phase II was -- Are there significant differences between student affective characteristics in more effective schools and less effective schools when background variables are controlled? To determine whether there were significant differences in affective characteristics between students in more effective schools and in less effective schools, a multivariate analysis of covariance (MANCOVA) was employed. This technique was selected since it adjusts for the intercorrelations among the dependent variables while controlling for the effects of the covariates. The independent variable was group membership (i.e., more effective school or less effective school) and the dependent variables were the four measures of affective characteristics. The covariates utilized were student sex, family mobility, student attendance, student age, father's education, mother's education, father's occupation, family size, family intactness, family socioeconomic status, and student ability. Fewer covariates could have been used, but efficiency was not a critical concern in this analysis. The sample size was large enough to include all background variables as covariates without excessively sacrificing degrees of freedom.

A subsequent two group discriminant function analysis was conducted to measure the success of the four affective variables in distinguishing between students who attended more effective schools versus those who attended

less effective schools. Unadjusted rather than adjusted scores on the four affective measures were used. Since schools have little or no control over the variability in the background variables employed in this study, using unadjusted scores in the discriminant function analysis provides a more meaningful, practical perspective on the ability of the affective measures to distinguish between students attending more effective and less effective schools. Cohen's (1968) Kappa was used to obtain a measure of the percentage of correct classifications over and above what would be expected by chance alone.

Findings

The results of the multivariate analysis of covariance as summarized in Table 5 indicate that significant differences existed between more and less effective schools in terms of student affective characteristics ($F = 3.72$; $df = 4,198$; $p < .05$). Follow-up univariate F-tests revealed that more and less effective schools differed significantly on all four affective measures. On these measures, the affective disposition of students in more effective schools was consistently more positive than that of students in less effective schools. The adjusted and unadjusted means and standard deviations for the four affective measures are presented in Table 6. In reviewing Table 6, it is important to note that the covariates operated consistently across the four affective measures. Means for the more effective schools were adjusted downward and means for the less effective schools were adjusted upward.

A discriminant function analysis was conducted to determine the extent to which student affective characteristics could be utilized to predict school membership. The discriminant function obtained was as follows:

Table 5

Results of the MANCOVA and the Univariate F Follow-up Conducted to Determine if Significant Differences Existed Between More and Less Effective Schools in Terms of Affective Characteristics

MANCOVA Results				
	Approximate F	Hypotheses df	Error df	Significance of F
Affective Characteristics	3.72	4.00	198.00	.006

Univariate F Results						
Variable	Hypotheses SS	Error SS	Hypotheses MS	Error MS	F	Significance of F
SAI	44.00	1917.76	44.00	9.54	4.61	.033
IARP	24.29	1113.64	24.29	5.54	4.38	.038
IARN	82.76	1519.45	82.76	7.56	10.95	.001
JIM	1536.84	73147.18	1536.84	363.92	4.22	.041

Table 6

Adjusted and Unadjusted Means and Standard Deviations for the Four Affective Measures Within More and Less Effective Schools

	SAI	JIM	IARP	IARN
More Effective (N = 93)				
Unadjusted Means	13.6	100.1	13.2	12.1
Adjusted Means	13.0	97.1	13.0	11.9
Standard Deviations	3.87	18.22	2.47	2.62
Less Effective (N = 129)				
Unadjusted Means	11.1	83.9	11.7	10.2
Adjusted Means	11.6	86.0	11.9	10.4
Standard Deviations	3.13	22.39	2.41	2.76

SAI = Self Concept
JIM = Student Motivation
IARP = Responsibility for Successes
IARN = Responsibility for Failures

$D = .5377\ Z_1 + .3781\ Z_2 + .2965\ Z_3 + .2043\ Z_4$. A chi-square test indicated this function was statistically significant ($\chi^2 = 48.78$; $p < .01$). The standardized weights contained in the discriminant function are important to examine because their relative absolute size is a measure of the relative discriminating power of the corresponding affective variables. In examining these standardized weights, it is evident that student motivation (JIM) contributed most to the difference between the two groups, followed by responsibility for failures (IARN), self-concept (SAI), and responsibility for success (IARP).

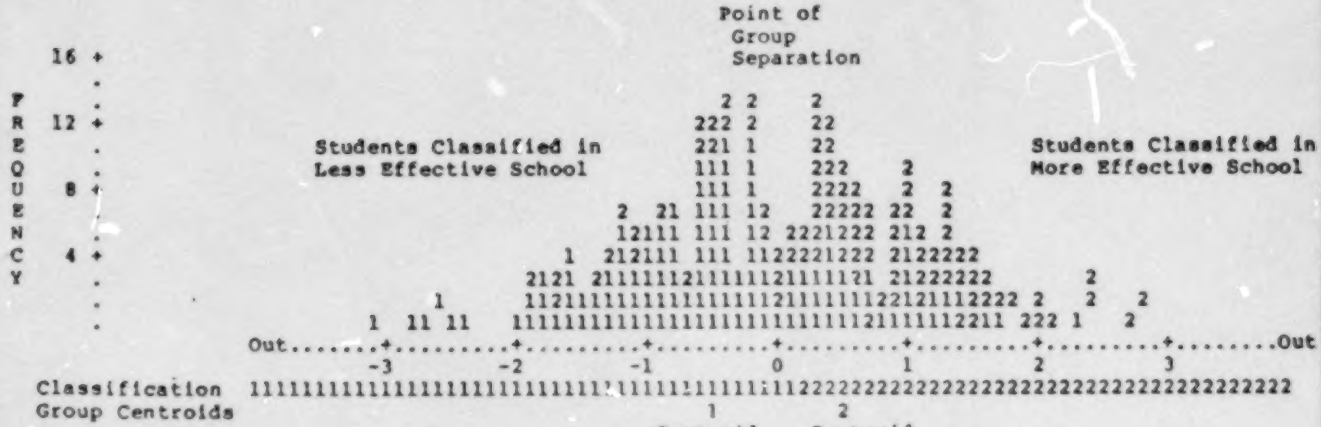
The histogram in Table 7 illustrates graphically the overall effectiveness of the main discriminant function to separate students in more effective schools from those in less effective schools. The actual number of cases classified correctly was 163, representing seventy-three percent of the students from both more and less effective schools. When these data were broken down by group membership, it was evident that the discriminant function was consistent in its predictions. Seventy-five percent of the more effective school students were classified properly. Also, seventy-two percent of the less effective school students were classified properly. In correcting the results of the discriminant function analysis for chance occurrences by applying Cohen's Kappa, it was found that Kappa was statistically significant ($z = 6.53$, $p < .001$). The discriminant function correctly predicted group membership forty-six percent over and above what would be expected by chance alone. In summary, these analyses have shown that significant differences exist between more and less effective schools with regard to affective characteristics and that affective characteristics can be utilized to predict group membership significantly within more and less effective schools.

Table 7

Histogram of Discriminant Scores for More and Less Effective School Students

All-Groups Stacked Histogram

--Canonical Discriminant Function 1 --



Classification

1 = Less Effective School Student
2 = More Effective School Student

Discussion of Findings

Previous effective school studies have not examined specifically the construct of student affect. However, Scott and Walberg (1979) recognized the need to investigate affective and background variables in addition to those administrative and instructional factors identified by Edmonds and Frederiksen (1978). The results of this study reinforce the need expressed by Scott and Walberg (1979) and indicate that affective variables are significant mediating variables of school effectiveness. Further study, utilizing more diverse samples of students in terms of grade levels and background, is necessary. As more evidence is accumulated, schools may begin to recognize the importance of this construct and, therefore, monitor both student affective and cognitive development.

An examination of the results of this study leads to the following questions:

(1) Would similar results be found between more and less effective school settings when utilizing different grade levels, affective measures, and background variables?

(2) Is there a significant relationship between administrative and instructional variables and student affective characteristics?

(3) Would increases in student affect result in significant increases in student achievement?

Summary

The results of this study provide another perspective on the complex topic of school effectiveness. Perhaps the most important contribution is support for the position that student affective characteristics are an

important aspect of school effectiveness due to the significant relationship between student affective characteristics and a school's relative effectiveness. These results reinforce Bloom's (1976) contention that student affective characteristics may be a partial prerequisite to student achievement and school effectiveness.

Admittedly, the construct of student affect is more difficult to measure and to manipulate than input variables related to programs. If, however, administrative and instructional variables are indeed mediated by student affective characteristics, then it is imperative that educators examine affective factors further.

Reference Notes

Bledsoe, J. C. & Garrison, K. G. The self-concept of elementary school children in relation to their academic achievement, intelligence, interests, and manifest anxiety. Unpublished manuscript, University of Georgia, 1962.

Brookover, W. B. & Lezotte, L. W. Changes in school characteristics coincident with changes in student achievement. Unpublished manuscript, Michigan State University, College of Urban Development, 1979.

Edmonds, R. What do we know about teaching and learning in urban schools. Vol. 6, Prepared for the National Conference on Urban Schools, 1978.

Edmonds, R. & Frederiksen, J. R. Search for effective schools: The identification and analysis of city schools that are instructionally effective for poor children. Cambridge, Massachusetts: Harvard Center for Urban Studies, 1978.

Frederiksen, J. School effectiveness and equality of educational opportunity. Report submitted to the Carnegie Corporation by the Center for Urban Studies, Cambridge, Massachusetts, December, 1975.

Frymier, J. R. Development and validation of a motivation index: A sixth report. Columbus Ohio: The Ohio State University, College of Education, 1965a.

Frymier, J. R. JIM scale student questionnaire. Columbus, Ohio: The Ohio State University, College of Education, 1965b.

Singh, B. How we selected a standardized achievement test battery. Portland, Maine: Portland Public Schools, Department of Research and Evaluation, 1979.

References

Bloom, B. S. Human characteristics and school learning. New York: McGraw-Hill Book Company, 1976.

Bloom, B. S. All our children learning. New York: McGraw-Hill Book Company, 1981.

Brookover, W. B., Thomas, S., & Paterson, A. Self-concept of ability and school achievement. Sociology of Education, 1964, 37, 271-278.

Cohen, J. Weighted kappa: Nominal scale agreement with provision for scaled disagreement or partial credit. Psychological Bulletin, 1968, 70, 213-19.

Cohen, M. Effective schools: What the research says. Today's Education, April-May 1980, pp.

Coleman, J. S., Campbell, E. Q., Hobson, C. J., McPartland, J., Moral, A. N., Weinfield, F. A. & York, R. L. Equality of educational opportunity. Washington, D.C.: U. S. Department of Health, Education and Welfare, Office of Education, U. S. Government Printing Office, 1966.

Crandall, R. A., Katkovsky, W., & Crandall, V. J. Children's beliefs in their own control of reinforcements in intellectual academic achievement situations. Child Development, 1965, 33, 91-109.

Crandall, V. J., Katkovsky, W. & Preston, A. Motivational and ability determinants of young children's intellectual achievement behaviors. Child Development, 1962, 33, 643-661.

Deci, E. L. Intrinsic Motivation. New York: Plenum Press, 1975.

Delisle, J. R. The revolving door model of identification and programming for the academically gifted. Unpublished doctoral dissertation, University of Connecticut, 1981.

Educational Testing Service. Sequential tests of educational progress--series II manual. Reading, Massachusetts: Addison-Wesley Publishing Company, 1971.

Educational Testing Service. Sequential tests of educational progress--series II. Reading, Massachusetts: Addison-Wesley Publishing Company, 1972.

Educational Testing Service. School and college ability tests--series II. Reading, Massachusetts: Addison-Wesley Publishing Company, 1973a.

Educational Testing Service. School and college ability tests--series II manual. Reading, Massachusetts: Addison-Wesley Publishing Company, 1973b.

Feather, N. T. Persistence at a difficult task with alternative task of intermediate difficulty. Journal of Abnormal and Social Psychology, 1963 66, 604-609.

Fenn, L. M. An investigation of the relationship between student affective characteristics and student achievement within more and less effective school settings. Unpublished doctoral dissertation, University of Connecticut, 1983.

Gordon, C. Studying the child in school. New York: Wiley Press, 1965.

Hess, R. D. Educability and rehabilitation: The future of the welfare class. Journal of Marriage and Family Life, 1964, 26, 422-429.

Jensen, A. R. Social class race and genetics: Implications for education. American Educational Research Journal, 1968, 5, 1-4.

Kifer, E. The effects of school achievement on the affective traits of the learner. Unpublished doctoral dissertation, University of Chicago, 1973.

Kohn, M. Social competence, symptoms and underachievement in childhood: A longitudinal perspective. Washington, D.C.: V. H. Winston & Sons, 1977.

Lefcourt, H. M. Locus of control. Hillsdale, New Jersey: Lawrence Eribaum Associates, 1976.

Madaus, G. F., Airasian, P. W. & Kellaghan, T. A reassessment of the evidence--School effectiveness. New York: McGraw-Hill Book Company, 1980.

McGhee, P. E. & Crandall, V. C. Beliefs in internal-external control of reinforcements and academic performance. Child Development, 1968, 39, 91-100.

Nowicki, S., Jr. & Roundtree, J. Correlates of locus of control in secondary school age students. Developmental Psychology, 1971, 4, 477-478.

Purkey, W. W. Self-concept and school achievement. Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1970.

Rapier, J. L. The learning abilities of normal and retarded children as a function of social class. Journal of Educational Psychology, 1968, 58, 102-110.

Ringness, T. A. The affective domain in education. Columbus, Ohio: Little, Brown and Company, 1975.

Robinson, J. P. & Shaver, P. R. Measures of social psychological attitudes, Appendix B. Survey Research Center, Institute for Social Research, University of Michigan, Ann Arbor, Michigan, 1973.

Ryals, K. R. An experimental study of achievement motivation training as a function of the moral maturity of trainees. Unpublished doctoral dissertation, Washington University, St. Louis, Mo., 1969.

Scott, R. & Walberg, H. J. Schools alone are insufficient: A response to Edmonds, Educational Leadership, 1979, 37, 24-27.

Taylor, R. G. Personality traits and discrepant achievement: A review. Journal of Counseling Psychology, 1964, 11, 76-82.

Uguroglu, M. E. & Walberg, H. J. Motivation and achievement: A quantitative synthesis. American Educational Research Journal, 1979, 16, 375-390.

Weber, G. Inner-city children can be taught to read: For successful schools. Washington, D.C.: Council for Basic Education, 1971.

Whiteman, M. & Deutsch, M. Social disadvantage as related to intellective and language development. In M. Deutsch, I. Katz, and A. R. Jensen, (Eds.), Social Class, Race and Psychological Development. New York: Holt, Rinehart and Winston, Inc., 1968.

Whitmore, J. R. Giftedness, Conflict, and Underachievement. Boston: Allyn and Bacon, 1980.